AT-VP504E FXS
AT-VP504E FXO

Voice over IP for LAN and WAN

VoIPtalk

Telephony Gateways

VoIPtalk - Voice over IP Networking for the Enterprise

VoIPtalk is Allied Telesyn's Voice over IP networking solution for the enterprise, scaling from the smallest remote office to the busiest central site. VoIPtalk components include telephone/IP gateways, PSTN/IP gateways and the management software required to control the operation of these networks. VoIPtalk is designed to dramatically reduce telecommunications costs, since calls are re-routed through data networks instead of standard telephone networks. Outlay is minimal as VoIPtalk fully utilises existing telecommunications equipment and IP data networks. VoIPtalk products interwork seamlessly with Allied Telesyn's comprehensive range of wide area network routers.

The AT-VP504E FXS Telephony/IP Gateway

The AT-VP504E FXS (Foreign Exchange Service) connects up to four conventional telephones or G3 fax machines to a Local Area Network with access to an intranet or the Internet to permit high-quality, full-duplex, audio/fax communications over IP Networks. Allied Telesyn's AR series of routers can provide the gateway required to connect to the Internet or corporate IP wide area network (WAN), supporting quality of service (QoS) features designed to ensure optimum voice quality. The AT-VP504E FXS performs all required IP telephony tasks in one compact standalone enclosure. It digitises the audio signal coming from the telephone or fax and then compresses and packetises this for transmission over the TCP/IP network.

The AT-VP504E FXO PSTN/IP Gateway

The AT-VP504E FXO (Foreign Exchange Office) unit supports up to four analogue connections to the Public Switched Telephone Network (PSTN), providing a PSTN gateway facility for IP networks. A number of PSTN gateways may be installed on an IP network, at different locations. When an IP voice call needs to be 'broken out' to the PSTN network, the PSTN gateway nearest the destination can be used. In this way, potentially long-distance calls can be turned into 'local' calls and high telco charges can be avoided. Alternatively, incoming calls from the PSTN can be routed through the AT-VP504 FXO for connection to telephones attached to AT-VP504 FXS units on the IP network, ensuring that legacy compatibility is maintained. 'Hop-on' and 'hop-off' PSTN gateways can be used to allow PSTN calls to locally access the corporate IP network, be routed internationally over IP, then break back out through another PSTN gateway at the destination, as a local call.

Allied Telesyn

Simply connecting the IP world

Fully Configurable 'PSTN-Like' Experience

The AT-VP504E FXS provides all the usual tones normally heard on the standard telephone network. For example, a dial tone will be heard as soon as the handset is lifted. Call progress tones such as ring-back, busy and error are programmable by country. In addition, the AT-VP504E FXS can be configured to accept virtually any format of telephone number, for example, a series of three digit 'extensions' numbers could be set up to make calls, as used on a PBX, or it can be configured to look like the PSTN with users dialing a full 'national' number to make a connection.

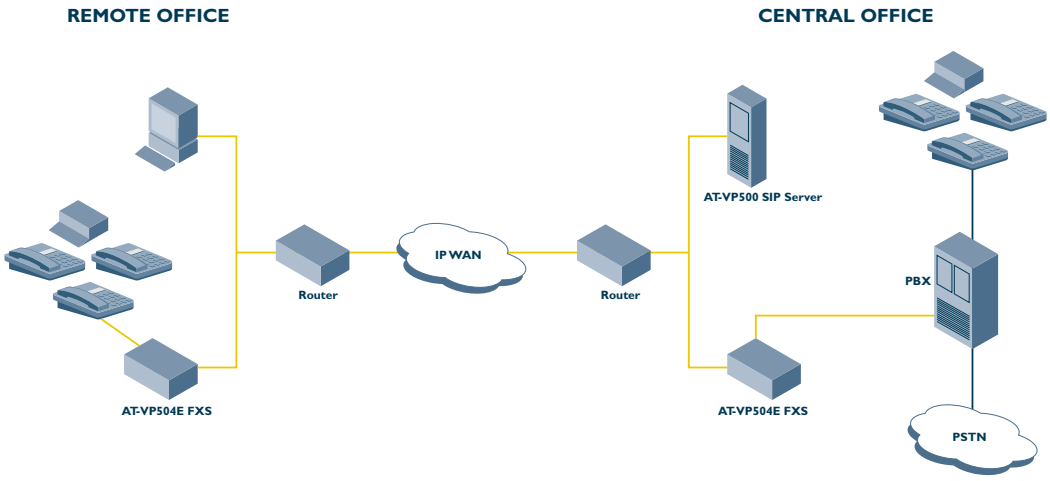
Choice of SIP or H.323 Operation

The AT-VP504 units support both Session Initiation Protocol (SIP) as well as the older H.323 protocol for VoIP networks. Newer installations will favour SIP due to its optimisation for IP networking and better response times, while legacy networks may require H.323 operation for interworking and compatibility reasons. SIP or H.323 protocol is an order option.

Easy to Set-up

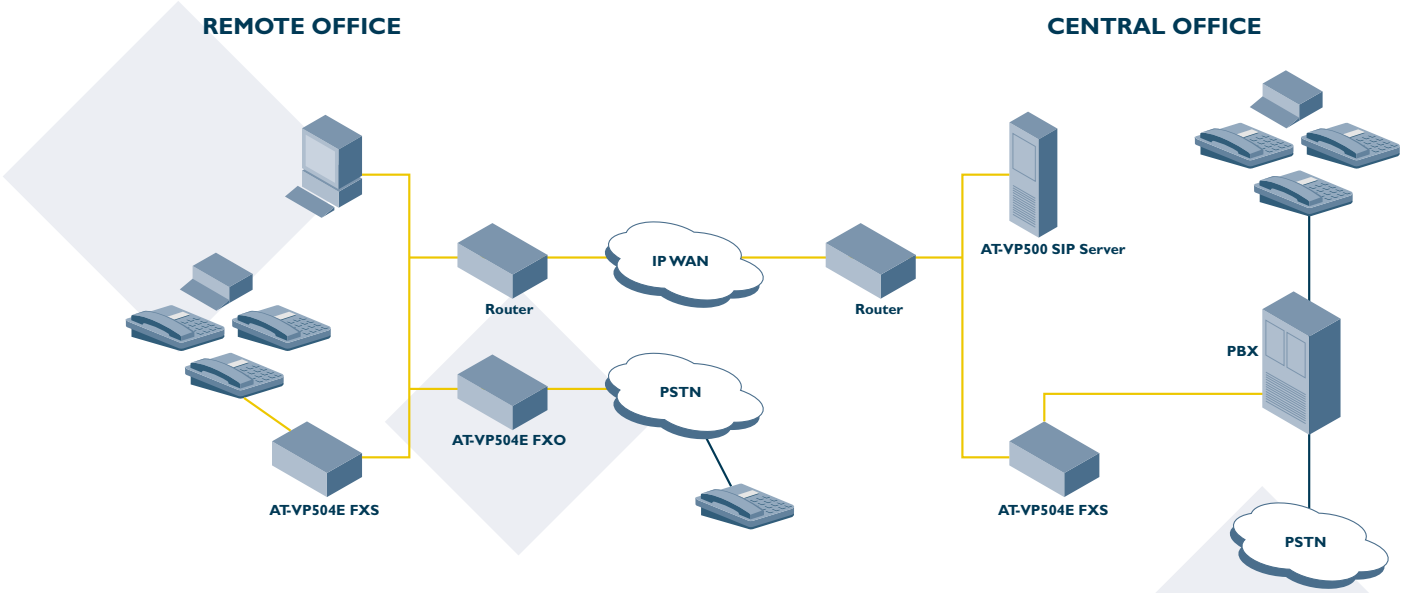
The AT-VP504E units can be integrated seamlessly into an existing management environment. SNMP support for SIP units and an integral HTTP server for H.323 operation allows remote management and configuration to be carried out simply and quickly. The units are designed to be desktop stackable. With the optional mounting kit, they can also be wall-mounted or rackmounted. They can be upgraded simply and quickly by loading new firmware into Flash memory using the Trivial File Transfer Protocol (TFTP), new enhancements can be emailed to site then loaded into the unit in a matter of seconds.

Application showing long line PBX Extension



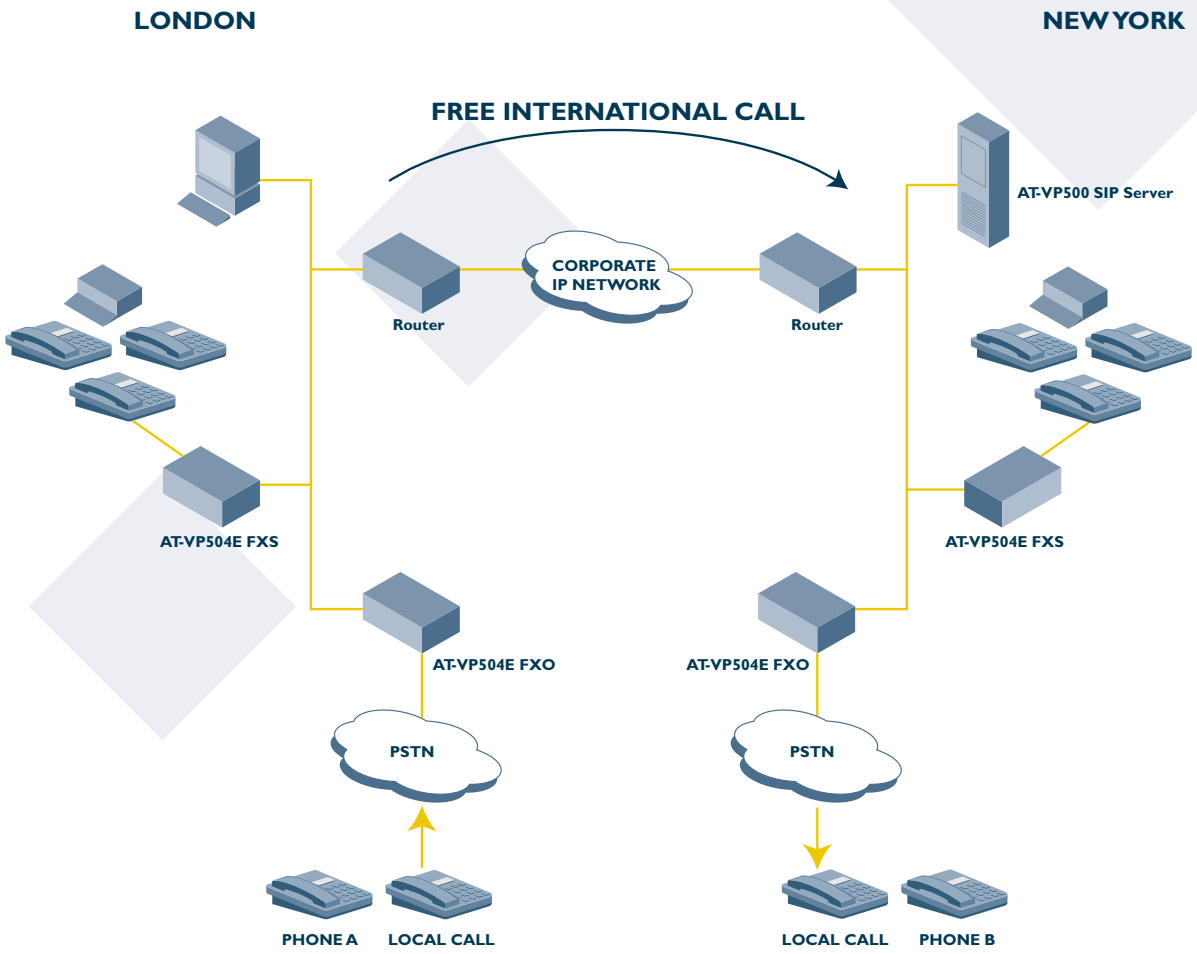
In this SIP example, central PBX connectivity is extended to remote offices and teleworkers over the IP data network, resulting in PSTN call charge savings. The IP data network can be local or world-wide. All AT-VP504E phone/fax/PBX connections are analogue. The AT-VP500 SIP Server provides call address mapping, user registration and AT-VP504E device configuration.

Application showing addition of AT-VP504E FXO PSTN Gateway



In this diagram, the remote office site now has a directly attached AT-VP504E FXO unit providing IP telephony gateway services to the PSTN. IP voice calls are converted into analogue form for transmission across standard telephone lines; similarly, incoming calls from the normal telephone network are converted into IP calls for onward transmission across the corporate IP network. This allows local PSTN callers to 'hop onto' the corporate IP network and make free long distance calls to corporate or other destinations.

Application showing 'hop-on' and 'hop-off' PSTN Gateways



In the above diagram, Phone A makes a local call to its nearest PSTN Gateway in London to 'hop-on' to the corporate IP network. The IP voice call is then routed, free of charge, across the IP network to New York, where it accesses a second PSTN gateway and 'hops-off', making a second local call to Phone B.

"VoIPtalk offers toll-quality, fully standards based, voice/fax over IP networking for both the small offfice and the enterprise, including gateway services to the public telephone network."

Analogue Modem and Fax Interface

The AT-VP504E FXS can be used with 9.6kbps to 33.6kbps analogue modems (V.34 support over clear channel). All four ports of the AT-VP504E FXS are capable of handling G3 fax transmissions at speeds up to 14.4kbps. Automatic fax mode detection is standard on all ports, so the unit automatically detects if a call originates from a voice or fax transmission and acts accordingly.

Full Integration with Allied Telesyn's AT-VP500 SIP Server

The AT-VP500 SIP Server is a set of software tools that helps manage a network of AT-VP500 products and SIP users to provide end-to-end IP Telephony solutions. In particular, the AT-VP500 SIP Server helps to translate standard telephone numbers into their corresponding IP addresses, looks for available gateways to place calls onto the PSTN and keeps records of all available AT-VP500 devices on the network. The SIP Server runs under Windows NT and is required to make effective use of a network of AT-VP504E FXS/FXO units.

H.323 Gatekeeper

When operating the H.323 protocol, the AT-VP504E FXS/FXO units require a H.323 Gatekeeper to provide a broad range of network services, including configuring, monitoring and managing registered network users. Policies can be set to control network resources such as bandwidth. The H.323 Gatekeeper also provides address translation, network topology and zone control functions. The H.323 Gatekeeper software runs under Windows NT.

Quality of Service (QoS) Support

Differentiated Services Code Point tagging (DSCP), or 'DiffServ', is supported, this allows a number of different QoS values to be assigned to the voice packets, for example, the default setting is 'low delay, high throughput and normal reliability'. Corresponding policy filters can then be defined in Allied Telesyn routers to provide for priority voice transmission across the wide area IP network. 802.1q VLAN tagging is supported by the AT-VP504E FXS/FXO in H.323 mode, for Ethernet frame prioritisation.

Supplementary Telephony Services

The AT-VP504E FXS operating in SIP mode, offers telephone services that a user can use directly on their telephone:-

- Call forward on unconditional, busy and no answer
- Call waiting
- Call transfer
- Caller ID on call waiting

Emergency Bypass

In addition to the four phone/fax ports, the AT-VP504E FXS has a fifth RJ11 connector used to connect to a standard PSTN line. During normal operation, this line is not used, however, if mains power should fail, or if the IP network is down, the PSTN line will automatically be switched in and can be used as an emergency bypass line. The bypass line can also be triggered by a software control signal.

Feature Summary

Switching LED Indicators

Vocoders	G.711 (A-law, μ-law) G.723.1 G.729 a, b
IP Telephony Protocols	SIP H.323v2 (Option at order)
Fax protocols	T.30 and T.38
Transport Protocols	RTP/RTCP RFC1889, RFC1890
Network Management Protocols	SNMP version 2 (SIP) DHCP – RFC2131, RFC2132 TFTP – RFC1350, RFC2347, RFC2348, RFC2349 Syslog HTTP version 1.0 (H.323)

Analogue (FXS) Line Interface

- Direct connect to a fax machine or telephone
- RJ-11 connector
- DC feeding of the access line protected for over voltage
- Loop current detection and hook flash detection capable
- Generation of Selective Ring

Switching Interface Connections

Trunk type	Loop Start: capable of Wink and Immediate signalisation
Ring Source	70 VRMS @ 20 up to 50 Hz (selectable) sine signal
Nominal Impedance	BellCore compliant 600/900 Ohms default setting. International options available
Ring Drive capacity	Up to 3 ringer equivalents (3 RENs) per port
Loop current range	15 to 50mA factory set. Default 30 mA regulated
Ring trip value	25 ms
On Hook Voltage	-36 VDC
Freq. Response	200 Hz to 3400 Hz ±3 dB (Tx/Rx)
Return Loss	600-3400 Hz: 30 dB

Audio Specifications

- Software input and output level adjustable within the range -36 dB to +12 dB
- Software-adjustable dynamic and static jitter buffer protection
- Automatic gain control: Application can enable/disable
- Programmable by country: Call progress tone generation including dial tone, busy tone, ring-back and error tones
- Silence detection/suppression level software adjustable

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PSTN (FXO) Line Interface

- Direct connect to PSTN line
- RJ-11 connector
- Trunk type: Loop start with support for polarity reversal detection
- Ring detection: 15Vrms min, 13 to 68Hz (configurable)
- Nominal Impedance: BellCore compliant 600/900 ohms default setting. International options available
- Ringer Equivalence: 0.8 REN

Display

- Power LED
- Network activity LED
- Test/Bypass LED indication

Connectors

- 4 RJ-11 connectors acting as traditional analogue phone/fax (FXS) interface
- 1 RJ-11 connector used for PSTN Bypass connectivity
- 1 RJ45 connector for 10/100BaseT Ethernet access (Auto-sense: up to 100Mbps)

Power

AT-VP504E FXS
- Unregulated 12 Volts/24 Watts external tabletop power pack. Country-specific models

AT-VP504E FXO
- 85 - 265 VAC, 50 - 60 Hz, 24 Watt. Auto-sensing internal supply

Physical Characteristics

Dimensions (W/D/H)	55mm x 260mm x 180mm (2.2in x 10.4in x 7.2in)
Weight	580g (1.3 lbs) excl PSU
Temperature	
Operating	0°C to 40°C
Non-operating	-10°C to 70°C
Humidity	5 to 80% non-condensing

Approvals

- CE
- EN 60950
- EN55022 Class B
- FCC Part 15 Class B, Part 68
- UL 1950
- JATE

Hardware Ordering Information:

Item	Description	Part No.
AT-VP504E FXS/H.323	AT-VP504E FXS using H.323 protocol	990-11590-xx
AT-VP504E FXS/SIP	AT-VP504E FXS using SIP protocol	990-11591-xx
AT-VP504E FXO/H.323	AT-VP504E FXO using H.323 protocol	990-11592-xx
AT-VP504E FXO/SIP	AT-VP504E FXSO using SIP protocol	990-11593-xx

xx =
10 US power cord
30 UK power cord
40 Australian power cord
50 European power cord

Software Ordering Information:

Item	Description	Part No.
AT-VPSIP SERVER020-00	SIP Server 1-20 users	990-11594-00
AT-VPSIP SERVER040-00	SIP Server 21-40 users	990-11595-00
AT-VPSIP SERVER120-00	SIP Server 41-120 users	990-11596-00
AT-VPSIP SERVERMAX-00	SIP Server Unlimited	990-11597-00
AT-VPH323GK60-00	H.323 Gatekeeper 1-60 users	990-11601-00
AT-VPH323GK200-00	H.323 Gatekeeper 60-200 users	990-11602-00

Either SIP Server software or H.323 Gatekeeper software must be ordered with AT-VP504E FXS/FXO units, unless equivalent third party software is being used. Requires Windows NT platform.

Product Range

Allied Telesyn's long-term focus on price/performance networking has made it a market-leading provider of LAN, WAN and MAN network systems. Advanced Layer 3 switch and router technology perfectly complements its traditional Layer 2 switch, hub, adapter card and media conversion capabilities.

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